**FIG. 1**

Figure 1: Structure and biosynthesis routes of ceramides and sphingosine

FIG. 2

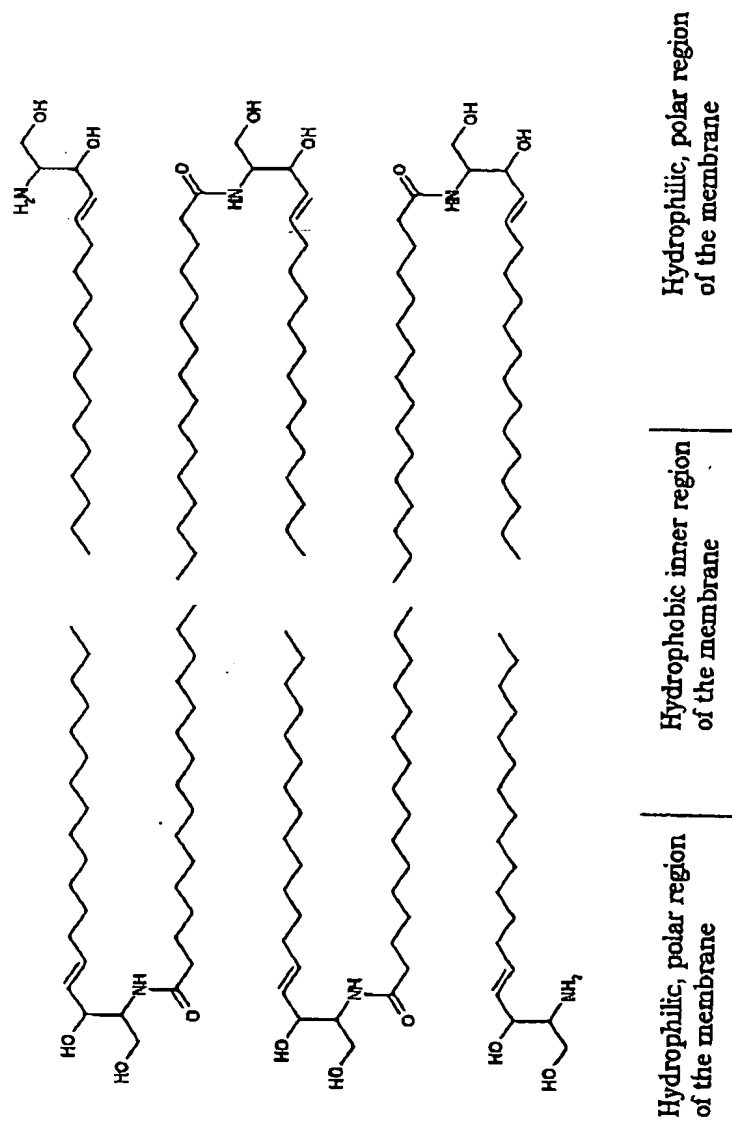


Fig. 2: Arrangement of the lipid molecules in the typical stable structure of the lipid bilayer of biological membranes: the fatty acid radicals are orientated into the interior of the membrane and form there a hydrophobic region. The hydrophilic, polar radicals are orientated outwards in the direction of the aqueous phase, i.e. the adjacent intra- or extra-cellular fluid.

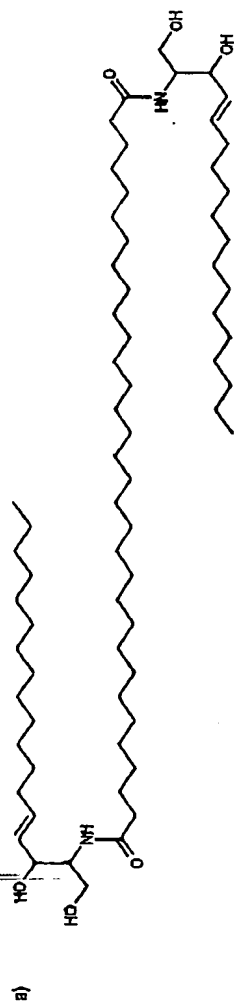
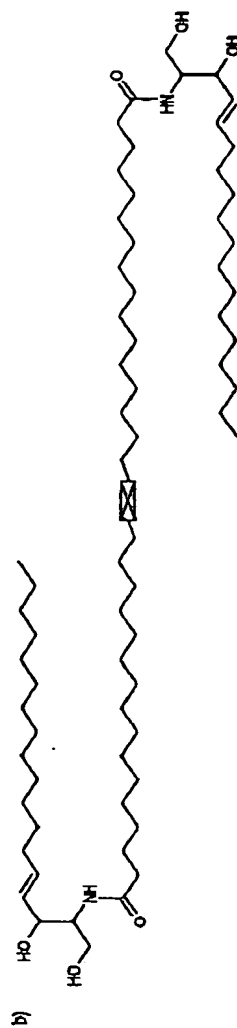
Fig.
3aFig.
3b

Fig. 3: Coupling of two ceramide molecules to form one dimer (a) by forming a covalent bond or (b) by inserting a short spacer (rectangle with diagonals) between the two ω -position carbon atoms respectively of a fatty acid radical of the two ceramide molecules.

Fig. 4

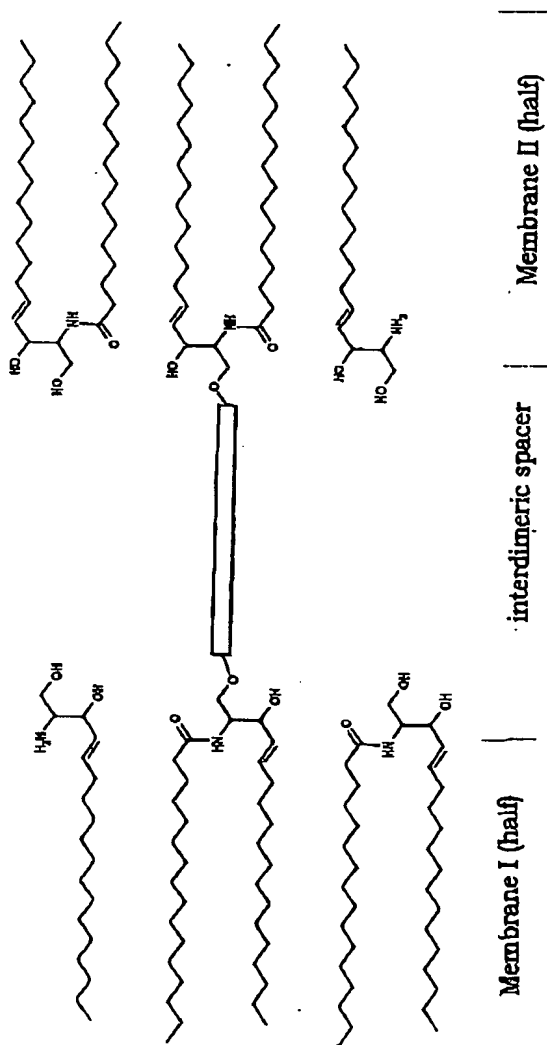


Fig. 4: Schematic representation of the arrangement of a "head-to-head" lipid dimer which is anchored respectively with a monomer in respectively one half of two lipid bilayers which are disposed in a parallel manner. The extended rectangle between the two monomers represents the so-called "interdimeric spacer". Only one half of the two double membranes respectively is represented.

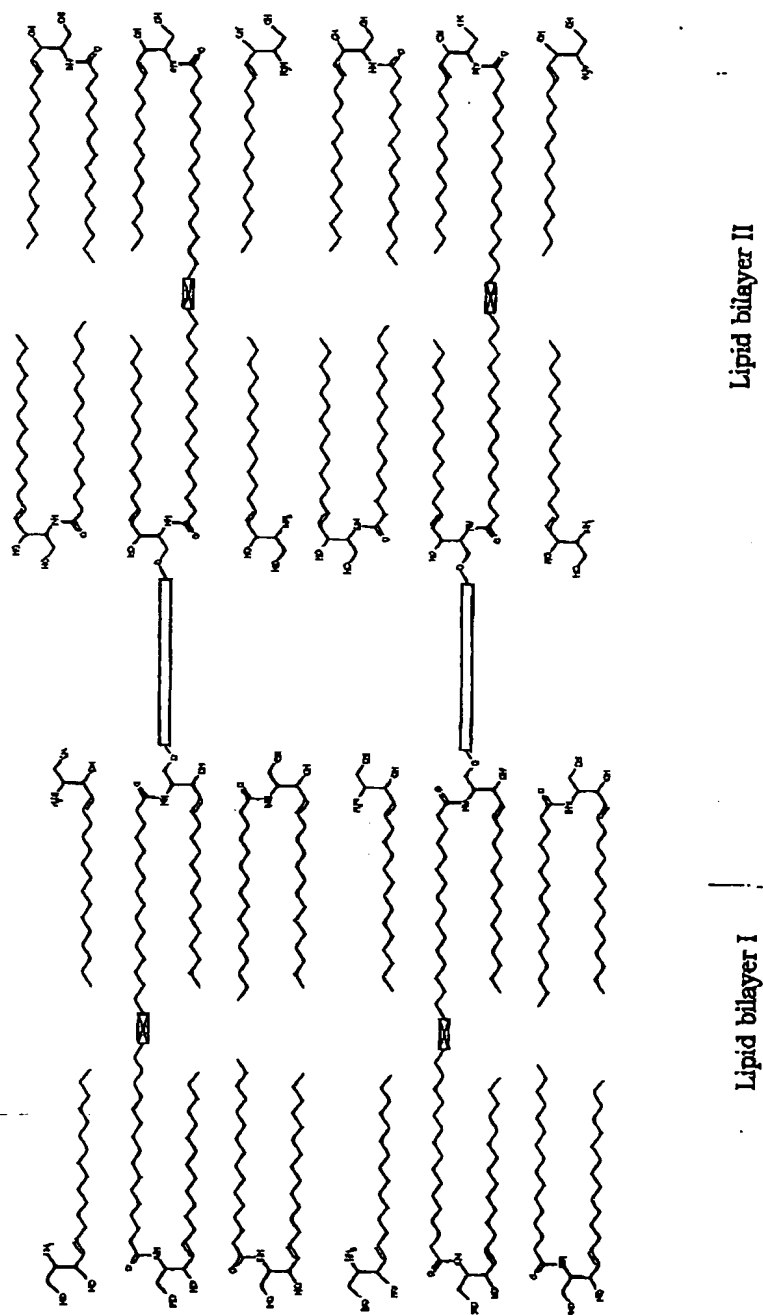
FIG. 5

Fig. 5: arrangement of lipid molecules comprising respectively two lipid dimers as bonding elements in a structure with two lipid bilayers.